

REMARKS/ARGUMENTS

Claims 1-15 remain pending. Claims 1 and 14 have been amended.

In the Advisory Action of December 15, 2006, the Examiner agreed that product by process limitations can, in general, impart structure to the product, the structure being inherent or inferred by the process. In the following, Applicant presents an argument regarding the distinguishing features of the invention as claimed from the cited prior art, the argument being based on product by process limitations.

Claim 1 has been amended to recite "a connection path optically written within the three-dimensional bulk dielectric" [emphasis added]. Dependent claim 14 has also been amended and now recites "a plurality of connection paths optically written within the bulk dielectric".

Applicant submits that the limitation of claim 1 imparts observable, physical and structural characteristics to the claimed optical connector.

The expression "optically written within the three-dimensional bulk dielectric" clearly refers to the process of optically writing a connection path in a bulk dielectric as described in the application as filed, at least at paragraph [0030] and at Fig. 3. Optically writing an optical connection path within a three-dimensional bulk dielectric imparts clear structural characteristics, such as the index of refraction of the optical connection path being higher than that of the bulk dielectric (see e.g. U.S. Publication No. 2003/0235385, para. [0054], incorporated by reference in the present application), and the index of refraction profile of the optical connection path being correlated to the optical signal energy intensity profile used in forming the optical connection path (see e.g. PCT Application No. WO 02/16070, p. 10 - 11, incorporated by reference in the present application). The connection path is also optically written within the bulk dielectric. The term "within" is defined as meaning "on the inside or on the inner side: INTERNALLY, INSIDE" (Webster's Third New International Dictionary). Thus, the fact that the connection path is "within" the three-dimensional bulk dielectric also imparts an observable structural and physical characteristic to the claimed optical connector.

Therefore, Applicant submits that the optical connector having a connection path "optically written within the three-dimensional bulk dielectric" is capable of clear structural construction, and that the structure implied by the process steps should be considered when assessing the patentability of the claims of the present application (MPEP 2113). Applicant further submits

that these distinctive structural characteristics will show claim 1, and its dependent claims, to be patentable over Flory.

Claim Rejections Under 35 U.S.C. § 102(e)

The Examiner rejected claims 1, 3-10, 13 and 14 as being anticipated by Flory. Applicant respectfully disagrees for at least the following reasons.

Flory discloses a photonic crystal interferometric switch (30). The switch (30) comprises a two-dimensional photonic crystal slab (31), a series of dielectric posts (39) disposed in air (see e.g. paras. [0013] and [0030]), an input portion (32), output portions (33, 34) and an interference channel (35). The input and output portions, and the interference channel, are defined by the absence of posts (39). There is no suggestion or teaching in Flory that the interference channel is optically written within the dielectric posts. The switch (30) further comprises a resonator region (38) having a connecting channel (36) defined by a missing post (39) and the presence of posts (24) larger than the posts (39) in the other parts of the switch. Light is input at the input portion (32) and the light intensity at the output of the switch is controlled by tuning the refractive index of the posts (24) in the resonator region (38), the tuning being accomplished by the tuning member (22). The space surrounding the input portion (32) and the output portions (33, 34) is occupied by dielectric posts (39, 24) and air (see e.g. para. [0030]). Thus, there is no suggestion or teaching in Flory that any connection path is optically written within a dielectric.

By contrast, the invention as claimed in claim 1 is to an optical connector comprising a three-dimensional optically-transmissive bulk dielectric material, e.g. prism 112 in Fig. 12, that can be abutted to an input connection face of an input optical component and to an output face of an output optical component. The optical connector of claim 1 further comprises an optical connection path optically written within the three-dimensional bulk dielectric. The connection path optically connects the input connection face to the output connection face. The invention as claimed in claim 1 has no relation to the photonic crystal structure taught by Flory.

Applicant submits that the plurality of rods (39, 24), or the combination of rods and air of Flory, cannot be construed to mean an optical connection path optically written within a three-dimensional bulk dielectric as recited in claim 1.

First, with respect to the optical connection path being optically written within the bulk dielectric, Applicant submits that the structural characteristics of such an optical connection path distinguishes claim 1 over Flory. As mentioned above, the structural characteristics of the connection path of claim 1 include the optical connection path having an index of refraction higher than that of the surrounding material and, the optical connection path having an index of refraction profile correlated to an optical signal energy intensity profile used in forming the optical connection path. Neither of these characteristics is present in the input and output regions of Flory's device, or in any other region of the device.

The input and output regions of Flory's device are defined by the absence of dielectric posts. This means that the input and output regions comprise only air, which has an index of refraction lower than that of the dielectric posts, or equal to that of the air between the posts, not higher than those indices. Additionally, Flory fails to teach or suggest any type of optical writing of input and/or output regions having an index of refraction profile correlated to an optical signal energy intensity profile used in writing the optical connection path.

Secondly, what Flory teaches is an arrangement of a plurality of dielectric posts in air, the arrangement defining an input portion (32) and output portions (33, 34), not a three-dimensional bulk dielectric having an optical connection path optically written therein as recited in claim 1. A single dielectric post of Flory does nothing in itself. Rather, it is the arrangement of the posts that defines the input and output portions of the switch (30). Should a single dielectric post be construed as meaning a three-dimensional bulk dielectric, as recited in claim 1, then Flory fails to teach or suggest any type of optical connection path optically written within that single dielectric post.

Therefore, Applicant submits that Flory fails to teach or fairly suggest an optical connector as claimed in claim 1. Flory simply does not teach or suggest a three-dimensional optically transmissive bulk dielectric together with an optical connection path optically written within the three-dimensional dielectric as recited in claim 1. Withdrawal of the rejection of claim 1 and of its dependent claims 3-10, 13 and 14 under 35 U.S.C. § 102(e) is respectfully requested.

Claim Rejections Under 35 U.S.C. § 103(a)

The Examiner rejected claims 2, 11, 12 and 15 as being obvious in view of Flory.

Claims 2, 11, 12 and 15 ultimately depend on claim 1, which, Applicant submits, is allowable for at least the reasons given above in response to the anticipation rejection. Since Flory does not teach all the claimed limitations of claim 1, it cannot teach or reasonably suggest all the claimed limitations of a claim depending from claim 1. Therefore, there is no showing of prima facie obviousness. Withdrawal of the rejection under 35 U.S.C. § 103(a) is respectfully requested.

It is submitted that this application is now in condition for allowance, and action to that end is respectfully requested.

The Commissioner is hereby authorized to debit \$120.00 (representing a one month extension of time) and \$790.00 (representing the fees for the Request for Continued Examination) from Deposit Account No. 501593, in the name of Borden Ladner Gervais LLP.

The Commissioner is hereby authorized to charge any additional fees, and credit any over payments to Deposit Account No. 501593, in the name of Borden Ladner Gervais LLP.

Respectfully submit
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